रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD

सी ई एन नं. - 03/2024 / CEN No. - 03/2024

Test Date	22/04/2025
Test Time	2:30 PM - 4:30 PM
Subject	RRB JE Stage 2 Electrical and Allied Engineering

*** Note**
Correct Answer will carry 1 mark per Question.
Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.
2. Chosen option on the right of the question indicates the option selected by the candidate.

Section : **General Abilities**

Q.1 **What is the maximum number of Ministers allowed in the Council of Ministers, including the Prime Minister, as per the 91st Amendment Act?**

Ans
✗ 1. 20% of Lok Sabha strength
✓ 2. 15% of Lok Sabha strength
✗ 3. 10% of Lok Sabha strength
✗ 4. 12% of Lok Sabha strength

Q.2 **The glass panel used in greenhouses is known to retain _____.**

Ans
✗ 1. rainfall
✗ 2. pH
✗ 3. humidity
✓ 4. heat

Q.3 **The Industrial Policy Resolution of 1956 categorised industries into how many groups?**

Ans
✗ 1. Seven
✓ 2. Three
✗ 3. Five
✗ 4. Nine

Q.4 **If you want the primary recipient to see that others have received a copy of an email, you should enter their email addresses in the _____ field.**

Ans
✗ 1. Bcc
✗ 2. Subject
✗ 3. To
✓ 4. Cc

Q.5 **The Millennium Development Goals (MDGs) aimed to reduce extreme poverty by which year?**

Ans
✗ 1. 2008
✗ 2. 2005
✗ 3. 2014
✓ 4. 2015

Q.6 What is the primary purpose of using a firewall on a Personal Computer?

Ans

✗ 1. To speed up internet connectivity

✗ 2. To increase storage space

✗ 3. To clean up temporary files

✓ 4. To block unauthorised access and protect the computer

Q.7 Inertia depends on which property of an object?

Ans

✗ 1. Shape

✓ 2. Mass

✗ 3. Velocity

✗ 4. Acceleration

Q.8 What is the first step to securing ones smartphone or tablet?

Ans

✗ 1. Turning off mobile data

✗ 2. Using only free Wi-Fi networks

✗ 3. Installing more apps

✓ 4. Setting a password/PIN-protected lock screen

Q.9 Which official in the Gupta administration was responsible for peace and war matters?

Ans

✗ 1. Vishayapati

✗ 2. Mahapratihara

✓ 3. Sandhi-Vigrahika

✗ 4. Mahadandanayaka

Q.10 According to the Tendulkar methodology, what was the estimated percentage of people below the poverty line in rural areas in 2011-12?

Ans

✗ 1. 15.5%

✓ 2. 25.7%

✗ 3. 27.5%

✗ 4. 20%

Q.11 What is India's global military ranking in the 2025 Global Firepower (GFP) index?

Ans

✗ 1. 2^{nd}

✗ 2. 3^{rd}

✓ 3. 4^{th}

✗ 4. 5^{th}

Q.12 Which of the following is NOT a source of release of smokestacks?

Ans

✓ 1. Rivers

✗ 2. Thermal power plants

✗ 3. Smelters

✗ 4. Industries

Q.13 Which of the following is NOT toxic to non-target organisms in the soil?

Ans

✗ 1. Herbicides

✗ 2. Fungicides

✓ 3. Organic fertilisers

✗ 4. Pesticides

Q.14 The practice of Jhum cultivation is prevalent in the _____.

Ans

✗ 1. South east

✗ 2. North west

✗ 3. South west

✓ 4. North east

Q.15 Which of the following cities hosted the inaugural Kho Kho World Cup in January 2025?

Ans

✗ 1. Mumbai

✗ 2. Kolkata

✗ 3. Chennai

✓ 4. New Delhi

Q.16 The energy that is derived from the use of radioactive isotopes is termed as _____.

Ans

✗ 1. solar energy

✗ 2. geothermal energy

✗ 3. thermal energy

✓ 4. nuclear energy

Q.17 Which of the following companies announced plans in February 2025 to construct the world's longest undersea cable, aiming to enhance internet connectivity across five continents, with landing points in India?

Ans

✗ 1. Microsoft

✗ 2. Amazon

✗ 3. Google

✓ 4. Meta

Q.18 In an electric circuit, what is the correct way to connect an ammeter?

Ans

✗ 1. In parallel with the source

✓ 2. In series with the component

✗ 3. In parallel with the component

✗ 4. In either series or parallel

Q.19 What is the purpose of the Collation option in the Print settings?

Ans

✗ 1. To change the printer selection

✗ 2. To adjust the page orientation

✗ 3. To select a custom print range

✓ 4. To print all the pages of a document as a set

Q.20 Why does a bee sting cause pain and irritation?

Ans

✓ 1. The sting injects methanoic acid.

✗ 2. The sting injects a mild sugar solution.

✗ 3. The sting contains a strong base.

✗ 4. The sting releases carbon dioxide gas.

Q.21 What happens when an acid reacts with a metal oxide?

Ans

✗ 1. Only salt is formed.

✗ 2. A salt and hydrogen gas are formed.

✓ 3. A salt and water are formed.

✗ 4. Only water is formed.

Q.22 Which of the following is NOT a component of a CPU?

Ans
- ✗ 1. Arithmetic Logic Unit (ALU)
- ✗ 2. Control Unit (CU)
- ✗ 3. Cache Memory
- ✓ 4. Hard Disk

Q.23 Which of the following states is NOT covered under the Atal Bhujal Yojana?

Ans
- ✗ 1. Rajasthan
- ✗ 2. Maharashtra
- ✓ 3. Jharkhand
- ✗ 4. Uttar Pradesh

Q.24 The maximum sound is generated _____.

Ans
- ✗ 1. from industrial smoke
- ✓ 2. by the take off of a jet plane
- ✗ 3. from vehicular emissions
- ✗ 4. from house chimneys

Q.25 The main use of chlorofluorocarbons is in _____.

Ans
- ✓ 1. refrigerants
- ✗ 2. smog
- ✗ 3. chimneys
- ✗ 4. vehicles

Q.26 The Rudra Veena is predominantly associated with which genre of Hindustani music?

Ans
- ✗ 1. Khayal
- ✗ 2. Ghazal
- ✓ 3. Dhrupad
- ✗ 4. Thumri

Q.27 Which state of matter shows the highest expansion when temperature is increased?

Ans
- ✗ 1. Solids
- ✗ 2. Liquids
- ✗ 3. Plasma
- ✓ 4. Gases

Q.28 What is the net force acting on an object if balanced forces are applied?

Ans
- ✗ 1. Infinite
- ✗ 2. Equal to the mass of the object
- ✓ 3. Zero
- ✗ 4. Equal to acceleration

Q.29 What is the approximate pH of a neutral salt solution?

Ans
- ✗ 1. Depends on the temperature
- ✗ 2. Less than 7
- ✗ 3. More than 7
- ✓ 4. Equal to 7

Q.30 Which of the following correctly explains why clothes dry faster on a windy day?

Ans
- ✗ 1. Wind decreases the temperature of the water molecules.
- ✓ 2. Wind removes the water vapour from the clothes' surroundings.
- ✗ 3. Wind reduces the surface area of the clothes.
- ✗ 4. Wind increases the humidity around the clothes.

Q.31 Which defect of vision occurs due to the weakening of ciliary muscles with age?

Ans
- ✗ 1. Myopia
- ✗ 2. Hypermetropia
- ✗ 3. Astigmatism
- ✓ 4. Presbyopia

Q.32 Dr. BR Ambedkar described which part of the Indian Constitution as its 'novel features', while Granville Austin referred to it as the 'Conscience of the Constitution'?

Ans
- ✗ 1. Fundamental Rights
- ✗ 2. Preamble
- ✗ 3. Fundamental Duties
- ✓ 4. Directive Principles of State Policy

Q.33 Which of the following is a characteristic difference between colloids and true solutions?

Ans
- ✗ 1. True solutions exhibit Brownian motion, but colloids do not.
- ✗ 2. True solutions show the Tyndall effect, but colloids do not.
- ✓ 3. True solutions have a single-phase system, whereas colloids have a two-phase system.
- ✗ 4. True solutions have visible solute particles, whereas colloids have invisible dispersed particles.

Q.34 What does PCB stand for?

Ans
- ✓ 1. Printed Circuit Board
- ✗ 2. Primary Control Board
- ✗ 3. Peripheral Connection Bus
- ✗ 4. Processing Circuit Board

Q.35 What happens when a computer is put into Sleep mode?

Ans
- ✓ 1. It keeps the session active in RAM while using minimal power.
- ✗ 2. It shuts down completely.
- ✗ 3. It stores data on the hard drive and powers off.
- ✗ 4. It restarts automatically after a few minutes.

Q.36 The fine powder that is obtained from the modified and recycled form of plastic is called _____.

Ans
- ✗ 1. polystyrene
- ✓ 2. polyblend
- ✗ 3. polythene
- ✗ 4. polyethylene

Q.37 The phenomenon of multiple echoes due to repeated reflections is called _____.

Ans
- ✗ 1. resonance
- ✓ 2. reverberation
- ✗ 3. refraction
- ✗ 4. diffraction

Q.38 Which of the following is the correct way to insert a new column in a spreadsheet?

Ans

✗ 1. Go to File > New > Column.

✓ 2. Go to Home > Insert > Insert Sheet Columns.

✗ 3. Use Ctrl + Z to insert a column.

✗ 4. Press Ctrl + X and then Insert.

Q.39 Which of the following correctly represents the chemical formula of a compound formed by aluminium and sulphate ions?

Ans

✗ 1. $Al(SO_4)_3$

✗ 2. Al_2SO_4

✓ 3. $Al_2(SO_4)_3$

✗ 4. $Al_3(SO_4)_2$

Q.40 In which of the following regions the Himalayas has the greatest width?

Ans

✗ 1. Arunachal Pradesh

✓ 2. Kashmir

✗ 3. Himachal Pradesh

✗ 4. Sikkim

Q.41 What is the shortcut key to start a slideshow from the beginning?

Ans

✓ 1. F5

✗ 2. Alt + Tab

✗ 3. Ctrl + P

✗ 4. Shift + F5

Q.42 Which of the following CANNOT be considered as a measure to control global warming?

Ans

✓ 1. Causing deforestation

✗ 2. Cutting down use of fossil fuel

✗ 3. Efficiently using energy

✗ 4. Reduction in emission of greenhouse gases

Q.43 Which Article provides Ministers the right to participate in parliamentary proceedings but without voting rights?

Ans

✗ 1. Article 53

✗ 2. Article 77

✓ 3. Article 88

✗ 4. Article 78

Q.44 Identify the correct formula for the compound formed between Mg^{2+} and PO_4^{3-} ions.

Ans

✗ 1. $MgPO_4$

✗ 2. $Mg_2(PO_4)_3$

✓ 3. $Mg_3(PO_4)_2$

✗ 4. $Mg(PO_4)_3$

Q.45 What was the main objective of the Extremists during the Indian National Movement?

Ans

✓ 1. To attain complete independence (Swaraj)

✗ 2. To bring social reforms

✗ 3. To promote British goods in India

✗ 4. To expand the legislative councils

Q.46 Who among the following inaugurated the 38th National Games held in Dehradun in January 2025?

Ans
✗ 1. Pushkar Singh Dhami
✗ 2. Anurag Thakur
✗ 3. Droupadi Murmu
✓ 4. Narendra Modi

Q.47 What is the primary function of the F4 key in MS Excel when editing a cell reference in a formula?

Ans
✗ 1. Repeats the last action
✗ 2. Opens the Find and Replace dialog
✗ 3. Refreshes the worksheet
✓ 4. Toggles between absolute and relative references

Q.48 If an object is dropped from rest, what will be its velocity after 15 seconds? (g = 9.8 m/s^2)

Ans
✗ 1. 149 m/s
✓ 2. 147 m/s
✗ 3. 145 m/s
✗ 4. 143 m/s

Q.49 If the absolute refractive index of a medium is less than 1, it means _____.

Ans
✗ 1. the medium absorbs all light
✗ 2. the medium is a perfect reflector
✓ 3. light travels faster in that medium than in vacuum
✗ 4. light travels slower in that medium than in vacuum

Q.50 The primary agent that helps in the decomposition of biodegradable matter in domestic sewage is _____.

Ans
✓ 1. bacterium
✗ 2. nitrate
✗ 3. phosphate
✗ 4. chloride

Section : **Technical Abilities**

Q.1 Which transmission voltage level is commonly used for bulk power transmission over medium distances?

Ans
✗ 1. Ultra-High Voltage (UHV)
✗ 2. Medium Voltage (MV)
✗ 3. Low Voltage (LV)
✓ 4. High Voltage (HV)

Q.2 A 3-phase, 10 kV distribution line delivers power to a load at a 0.8 power factor lagging. If the current is 50 A, and the load resistance and reactance per km are 0.15 Ω and 0.2 Ω, respectively, for a 400 m line, what is the approximate voltage drop per phase (in V/phase)?

Ans
✗ 1. 0 + j10
✗ 2. 1 + j10
✓ 3. 4.8 + j1.4
✗ 4. 1 + j5

Q.3 **Which of the following are the two major elements required for Resistance Welding?**

Ans
✗ 1. Arc and time
✓ 2. Current and pressure
✗ 3. Current and resistance
✗ 4. Arc and pressure

Q.4 **Identify the correct statement related to the P-N junction diode.**

Ans
✗ 1. The forward current of the diode is equal to reverse saturation current of the diode.
✓ 2. The forward current of the diode is greater than reverse saturation current of the diode.
✗ 3. The reverse saturation current of the diode is always zero.
✗ 4. The forward current of the diode is less than the reverse saturation current of the diode.

Q.5 **Arrange the circuits in ascending order as per the number of diodes required to realise the circuit.**

a. Full wave bride rectifier circuit
b. Half wave rectifier circuit
c. Centre tapped full wave rectifier circuit

Ans
✓ 1. b-c-a
✗ 2. a-c-b
✗ 3. c-a-b
✗ 4. a-b-c

Q.6 **Which of the following is NOT correct when high-voltage leads are eliminated in potential transformer (PT) bushings?**

Ans
✗ 1. Decreases size and weight of the PT
✓ 2. Increases the risk of short circuits
✗ 3. Measures line-to-ground voltages in a three-phase system
✗ 4. Reduces overall cost of the transformer

Q.7 **Which of the following modifications increases the ratio of full load torque to maximum torque in an induction motor?**

Ans
✗ 1. Decreasing supply voltage
✗ 2. Decreasing rotor resistance
✗ 3. Increasing stator resistance
✓ 4. Increasing rotor resistance

Q.8 **According to Lenz's law, what does the secondary current in a transformer produce?**

Ans
✗ 1. A magnetizing effect
✗ 2. An EMF to oppose the primary voltage
✗ 3. A back EMF that resists the load
✓ 4. A demagnetizing effect

Q.9 **From the right-hand rule, if we know the direction of magnetic field encircling a conductor or the magnetic polarity of a coil, we can determine the:**

Ans
✗ 1. direction of MMF
✗ 2. direction of flux
✗ 3. direction of EMF
✓ 4. direction of current

Q.10 Energy stored in an inductor is given by: (Given L is inductance, I is current, N is number of turns of coil, A is area of cross section, μ is permeability of flux and Φ is flux)

Ans

✗ 1. $\frac{\mu N^2 A}{L}$

✗ 2. $L\frac{di}{dt}$

✗ 3. $\frac{N\phi}{I}$

✓ 4. $\frac{1}{2}LI^2$

Q.11 Increasing the resistance R in a parallel RLC circuit will _____.

Ans

✗ 1. increase resonance frequency

✗ 2. increase the bandwidth

✓ 3. decrease the bandwidth

✗ 4. have no effect on bandwidth

Q.12 Why do modern steam power plants use a regenerative feedwater heating system?

Ans

✓ 1. It helps improve efficiency by reusing heat, so less fuel is needed.

✗ 2. It helps keep turbine blades cooler.

✗ 3. It makes the combustion process more effective.

✗ 4. It is mainly used to produce high-pressure steam.

Q.13 What is the primary characteristic of a Zener diode that distinguishes it from a regular diode?

Ans

✓ 1. Sharp breakdown voltage and ability to regulate voltage

✗ 2. Low forward voltage drop

✗ 3. High reverse breakdown voltage

✗ 4. High forward current rating

Q.14 In a Schering Bridge, if the known capacitor C_2 = 500 pF, known resistor R_3 = 5 kΩ, and the balancing resistor R_4 = 1 MΩ, what is the value of the unknown capacitor C_x?

Ans

✗ 1. 10 pF

✓ 2. 100 nF

✗ 3. 50 pF

✗ 4. 1 pF

Q.15 What is a key factor in selecting street light pole structures?

Ans

✗ 1. Focusing only on the aesthetic design of the pole.

✓ 2. The height, material, and durability to withstand environmental conditions.

✗ 3. Ignoring wind load calculations to reduce costs.

✗ 4. The colour of the pole.

Q.16 By which of the following is the welding current in an AC welding transformer controlled?

Ans

✗ 1. Increasing the primary voltage

✓ 2. Varying the magnetic flux

✗ 3. Using an electric motor

✗ 4. Changing the output current

Q.17 Which of the following applications makes use of capacitor?

Ans

✗ 1. Transformer

✗ 2. Microwave

✓ 3. Electric vehicle

✗ 4. Toaster

Q.18 For accurate voltage regulation calculation in a transformer, which of the following must remain constant?

Ans

✗ 1. Output (secondary) voltage

✗ 2. Core losses

✗ 3. Load power factor

✓ 4. Applied (primary) voltage

Q.19 In an inductor, if flux is maintained constant, _____ EMF will be induced.

Ans

✓ 1. no

✗ 2. infinite

✗ 3. positive

✗ 4. negative

Q.20 How are outdoor streetlight installations typically classified?

Ans

✗ 1. Based on the colour of the light fixtures

✗ 2. Based on the cost of the light fixtures only

✗ 3. Based on the aesthetic design of the poles

✓ 4. Based on the type of light source, mounting height, and application (e.g., residential, highway, or industrial areas)

Q.21 What is the function of the armature core in relation to the magnetic circuit?

Ans

✗ 1. To cool the armature conductors

✗ 2. To convert electrical energy into mechanical energy

✗ 3. To ensure electrical conductors do not short-circuit

✓ 4. To complete the magnetic circuit through the yoke and poles

Q.22 The Q-factor of a resonant circuit is 100. If the resonant frequency is 1 MHz, what is the bandwidth?

Ans

✗ 1. 10 MHz

✗ 2. 100 kHz

✗ 3. 1 kHz

✓ 4. 10 kHz

Q.23 Self inductance of a coil is directly proportional to the:

Ans

✗ 1. flux and the current flowing in the coil

✗ 2. current flowing in the coil only

✓ 3. flux and number of turns of the coil

✗ 4. number of turns and the current flowing in the coil

Q.24 In a parallel RLC circuit, if the inductive current I_L is greater than the capacitive current I_C, then _____.

Ans

✗ 1. $X_C > X_L$

✗ 2. $X_C = X_L$

✓ 3. $X_C < X_L$

✗ 4. circuit is at resonance

Q.25 **In a street lighting ring network, what is the primary reason for considering voltage drop?**

Ans

✗ 1. To maximise current flow

✗ 2. To decrease conductor resistance

✗ 3. To increase power loss for efficiency

✓ 4. To ensure all lights receive equal brightness

Q.26 **If the resistance (R) in a parallel RLC circuit increases, the quality factor (Q) will _____.**

Ans

✗ 1. remain the same

✗ 2. become zero

✗ 3. decrease

✓ 4. increase

Q.27 **Which of the following methods is NOT used for low resistance measurement?**

Ans

✗ 1. Potentiometer method

✓ 2. Loss of Charge method

✗ 3. Ammeter-Voltmeter method

✗ 4. Kelvin Double Bridge method

Q.28 **What does the 'Rate of Rise of Restriking Voltage (RRRV)' in circuit breakers refer to?**

Ans

✓ 1. The rate at which the voltage across the breaker contacts rises after current interruption

✗ 2. The rate at which the fault current increases in the system

✗ 3. The rate at which the breaker contacts close during normal operation

✗ 4. The speed at which the circuit breaker operates during a fault

Q.29 **How does the spear valve inside the nozzle enhance the operational efficiency of a Pelton turbine?**

Ans

✓ 1. By dynamically adjusting the jet velocity to match load demand

✗ 2. By diverting the water jet away from the buckets when needed

✗ 3. By storing excess kinetic energy for later use

✗ 4. By creating turbulence to improve energy dissipation

Q.30 **Which type of electrode is used in Carbon Arc Welding (CAW)?**

Ans

✗ 1. Aluminum coated electrode

✗ 2. Copper coated electrode

✗ 3. Tungsten electrode

✓ 4. Graphite electrode

Q.31 **Which gas is used to aid the starting process in Metal Halide Lamps?**

Ans

✗ 1. Carbon dioxide

✗ 2. Nitrogen

✓ 3. Argon

✗ 4. Neon

Q.32 **Which statements about the maximum power output of a cylindrical rotor synchronous generator are correct?**

I. Maximum power output occurs when the load angle (δ) is 90°.
II. Maximum power is proportional to the square of the terminal voltage (V).
III. Over-excitation increases the generator's maximum power capability.
IV. Maximum power is independent of the synchronous reactance (Xs).

Ans
✔ 1. Statements I and III only are correct.
✘ 2. Statements II and IV only are correct.
✘ 3. Statements II and III only are correct.
✘ 4. Statements I and IV only are correct.

Q.33 **What is the primary function of 'Percentage Differential Protection' in an alternator?**

Ans
✔ 1. To detect and protect against internal faults within the alternator windings
✘ 2. To detect and protect against external faults in the connected power system
✘ 3. To monitor the voltage regulation of the alternator
✘ 4. To protect against overloading of the alternator

Q.34 **Crawling typically causes an induction motor to operate at a speed that is:**

Ans
✔ 1. a fraction (e.g. 1/3) of synchronous speed
✘ 2. double the synchronous speed
✘ 3. equal to synchronous speed
✘ 4. slightly below synchronous speed under full load

Q.35 **The use of electronic ballasts in CFLs helps to eliminate:**

Ans
✔ 1. slow starting and flickering
✘ 2. overheating
✘ 3. excessive brightness
✘ 4. high voltage consumption

Q.36 **If the number of parallel paths (A) in a DC generator is increased, the generated EMF will:**

Ans
✘ 1. decrease
✔ 2. remain the same
✘ 3. increase
✘ 4. become zero

Q.37 **Why is the simple brake test generally used for small motors only?**

Ans
✘ 1. The simple brake test does not work with large motors.
✘ 2. Large motors have lower efficiency.
✔ 3. Large motors produce excessive heat that is difficult to dissipate.
✘ 4. Small motors do not require cooling.

Q.38 **In an alternator, if the load power factor changes from lagging to leading, the armature reaction effect shifts from:**

Ans
✔ 1. demagnetising to magnetising
✘ 2. magnetising to cross-magnetising
✘ 3. cross-magnetising to demagnetising
✘ 4. demagnetising to cross-magnetising

Q.39 What effect does excessive heat in a transformer have on its windings?

Ans

✔ 1. It reduces insulation resistance and can cause damage.

✘ 2. It increases transformer efficiency.

✘ 3. It improves insulation performance.

✘ 4. It has no significant effect.

Q.40 The Buchholz relay is connected between which two parts of the transformer?

Ans

✘ 1. Magnetic core and armature

✘ 2. Primary terminal and secondary terminal

✔ 3. Transformer oil tank and conservator tank

✘ 4. Primary winding and secondary winding

Q.41 In a transistor amplifier, the composition of the current in any branch during operation is:

Ans

✔ 1. the sum of AC and DC

✘ 2. DC only

✘ 3. AC only

✘ 4. the multiplication of AC and DC

Q.42 If the capacitance in a series RLC circuit is increased, the Q-factor will _____.

Ans

✘ 1. increase

✔ 2. decrease

✘ 3. remain unchanged

✘ 4. depend on frequency

Q.43 The material commonly used as resistance wire in heating elements is:

Ans

✘ 1. copper

✘ 2. aluminium

✔ 3. nichrome

✘ 4. silver

Q.44 The RMS value of voltage (V_{rms}) in a purely resistive AC circuit is related to peak voltage (V_m) by _____.

Ans

✘ 1. $V_{rms} = \frac{\sqrt{2}}{V_m}$

✘ 2. $V_{rms} = \sqrt{2} V_m$

✔ 3. $V_{rms} = \frac{V_m}{\sqrt{2}}$

✘ 4. $V_{rms} = V_m$

Q.45 Under constant mechanical load, changing the excitation of a synchronous motor affects which of the following?

I. Power factor
II. Armature current magnitude
III. Speed of the motor
IV. Real power output

Ans

✘ 1. I and IV only

✔ 2. I and II only

✘ 3. II and III only

✘ 4. III and IV only

Q.46 What is the angle that is formed between the incident ray and the normal line called?

Ans
- ✗ 1. Angle of deviation
- ✓ 2. Angle of incidence
- ✗ 3. Angle of refraction
- ✗ 4. Angle of reflection

Q.47 An apartment complex consists of 15 apartments, each with a peak demand of 8 kW. The maximum system demand recorded is 60 kW. What is the diversity factor?

Ans
- ✗ 1. 0.5
- ✗ 2. 3
- ✗ 3. 1.5
- ✓ 4. 2

Q.48 Which type of damping is commonly used in PMMC voltmeters and ammeters?

Ans
- ✗ 1. Spring-controlled damping
- ✓ 2. Electromagnetic damping
- ✗ 3. Air friction damping
- ✗ 4. Fluid friction damping

Q.49 A toroidal coil has a magnetic path length of 30 cm and a magnetic field strength of 750 A/m. The coil current is 250 mA. Determine the number of coil turns.

Ans
- ✓ 1. 900 turns
- ✗ 2. 800 turns
- ✗ 3. 750 turns
- ✗ 4. 625 turns

Q.50 A single-phase AC circuit has a voltage of 230 V and a current of 10 A. What is the apparent power (S)?

Ans
- ✓ 1. 2.3 kVA
- ✗ 2. 2.3 kW
- ✗ 3. 23 VA
- ✗ 4. 2300 VAR

Q.51 In the fabrication of a PNP transistor, what is the primary reason for using a buried layer of heavily doped P+ material beneath the N-type base region?

Ans
- ✗ 1. To increase the emitter injection efficiency
- ✗ 2. To reduce the base-emitter voltage
- ✗ 3. To reduce the collector-emitter saturation voltage
- ✓ 4. To prevent latchup and improve transistor stability

Q.52 M.M.F in a magnetic circuit is abbreviated as:

Ans
- ✗ 1. Magnetic Force
- ✗ 2. Magnetomotive Field
- ✗ 3. Magnetic Movement Field
- ✓ 4. Magnetomotive Force

Q.53 Which safety factor is most important when designing transmission lines under ice and wind conditions?

Ans
- ✗ 1. Thermal expansion factor
- ✗ 2. Electrical safety factor
- ✓ 3. Mechanical stress factor
- ✗ 4. Magnetic field factor

Q.54 If a residential area has an annual energy consumption of 28,908,000 kWh, what is its average demand?

Ans

✔ 1. 3300 kWh

✘ 2. 2200 kWh

✘ 3. 3000 kWh

✘ 4. 3 kWh

Q.55 The work done on a unit N pole in moving once around any single closed path in a magnetic field is equal to _____.

Ans

✘ 1. EMF in respective path

✘ 2. number of turns in respective path

✔ 3. Ampere turns linked with the path

✘ 4. current in respective path

Q.56 Why is a radial layout with high voltage drop unsuitable for industrial loads?

Ans

✘ 1. It reduces voltage fluctuation.

✘ 2. Voltage drop increases system reliability.

✘ 3. It helps maintain constant power factor.

✔ 4. Industrial loads require stable voltage level.

Q.57 What is the relationship between back EMF and the supply voltage in a DC motor?

Ans

✘ 1. Back EMF is directly proportional to the supply voltage.

✘ 2. Back EMF is equal to the supply voltage.

✘ 3. Back EMF is independent of the supply voltage.

✔ 4. Back EMF opposes the supply voltage.

Q.58 In a series magnetic circuit, _____ flux φ flows through each part of the circuit.

Ans

✔ 1. the same

✘ 2. different

✘ 3. zero

✘ 4. infinite

Q.59 Which type of transformer is used for stepping down current for measurement purposes?

Ans

✔ 1. Current transformer

✘ 2. Power transformer

✘ 3. Voltage transformer

✘ 4. Auto transformer

Q.60 What will be the current relationship in time domain for a capacitive circuit?

Ans

✘ 1. $C\frac{d^2v}{dt^2}$

✔ 2. $i(t) = C\frac{dv}{dt}$

✘ 3. $i(t) = C\int_0^t v(t)$

✘ 4. $i(t) = C\int_0^t v(t) + i(0)$

Q.61 For the full wave rectifier circuit with sinusoidal ac signal as its input, if the peak value of the output signal increases, its rms value of the ac component _____.

Ans

✔ 1. increases

✘ 2. decreases

✘ 3. remains the same

✘ 4. becomes zero

Q.62 What is a key consideration in public lighting installations?

Ans

✔ 1. Providing adequate illumination while ensuring energy efficiency and safety

✘ 2. Ignoring maintenance requirements to reduce costs

✘ 3. Focusing only on the aesthetic design of the light fixtures

✘ 4. Ensuring the lighting system operates without any protective devices

Q.63 For a P-N junction diode, the built in barrier potential of the junction is _____ proportional to the doping concentration and _____ proportional to the intrinsic concentration.

Ans

✘ 1. inversely; directly

✘ 2. inversely; inversely

✔ 3. directly; inversely

✘ 4. directly; directly

Q.64 The same polarity condition is essential in parallel operation because:

Ans

✘ 1. it increases the transformer efficiency

✘ 2. it reduces the transformer losses

✘ 3. it helps with voltage regulation

✔ 4. it ensures that the transformers are not damaged due to reverse currents

Q.65 Which of the following is a major disadvantage of the De Sauty Bridge?

Ans

✔ 1. It does not consider the dielectric losses in capacitors.

✘ 2. It requires both resistors and inductors for balance.

✘ 3. It cannot be used to measure very small capacitances.

✘ 4. It requires an AC power source.

Q.66 Which application is a common use of synchronous motors?

Ans

✘ 1. Electric cranes

✔ 2. Power factor correction

✘ 3. Household fans

✘ 4. Portable drills

Q.67 What is the primary purpose of 'Thermal Overheating Protection' in a transformer?

Ans

✘ 1. To protect against overvoltage conditions in the power system

✘ 2. To detect and protect against short circuits in the transformer windings

✔ 3. To monitor and prevent excessive temperature rise in the transformer

✘ 4. To detect faults in the transformer cooling system

Q.68 Ferrites are ferromagnetic ceramics which have a fairly constant _____.

Ans

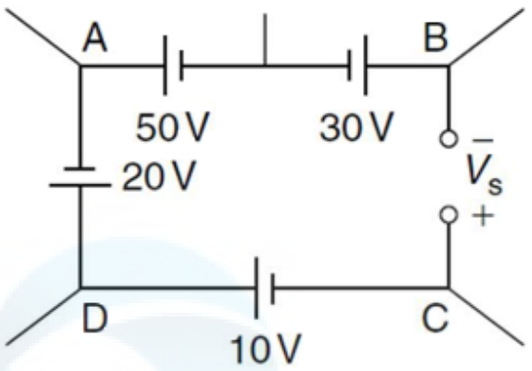
✔ 1. relative permeability

✘ 2. magnetic susceptibility

✘ 3. hysteresis loss

✘ 4. frequency response

Q.69 **Find the voltage Vs in the circuit by using Kirchoff's Voltage Law.**



Ans

✗ 1. 10 V

✗ 2. 20 V

✓ 3. 30 V

✗ 4. 50 V

Q.70 **Which of the following is a key requirement of a protective relay in terms of reliability?**

Ans

✓ 1. The relay must operate only when a fault occurs and remain stable during normal conditions.

✗ 2. The relay must have a complex design to handle multiple fault types.

✗ 3. The relay must reset immediately after a fault is cleared.

✗ 4. The relay must operate with a significant time delay to ensure coordination.

Q.71 **Which of the following is a fundamental principle for electrical installations, according to safety standards?**

Ans

✗ 1. Electrical circuits must be designed to operate without any protective devices

✓ 2. Electrical installations must ensure protection against electric shock, overcurrent and fault currents

✗ 3. Electrical systems should prioritise cost over safety considerations

✗ 4. Electrical installations do not require grounding or earthing systems

Q.72 **Which of the following best describes the role of a Time-of-Day (ToD) Tariff in energy conservation?**

Ans

✗ 1. It applies only to industrial consumers and has no impact on residential users.

✗ 2. It eliminates the need for load management by ensuring a constant energy supply.

✗ 3. It increases electricity costs uniformly throughout the day, regardless of demand variations.

✓ 4. It encourages consumers to shift electricity usage to off-peak hours, reducing peak demand and improving grid efficiency.

Q.73 **Compared to the MMF method, the EMF method is _____.**

Ans

✗ 1. only used for DC generators

✓ 2. less accurate due to assuming constant Z_s

✗ 3. more accurate due to accounting for saturation

✗ 4. independent of load power factor

Q.74 **In the equivalent circuit without core losses, the magnetising branch consists of _____.**

Ans

✗ 1. R_c in parallel with X_m

✗ 2. X_m in series with R_c

✓ 3. X_m alone

✗ 4. R_c alone

Q.75 Force on a current-carrying conductor will be _____ when it is placed at right angles to the direction of the magnetic field.

Ans

✗ 1. minimum

✗ 2. zero

✓ 3. maximum

✗ 4. infinite

Q.76 Why are salient pole rotors NOT used in turbo alternators?

Ans

✓ 1. Mechanical instability at high speeds

✗ 2. Inefficient cooling

✗ 3. High copper losses

✗ 4. Low mechanical strength

Q.77 If the frequency of an AC source connected to a pure capacitor is doubled, the capacitive reactance will _____.

Ans

✓ 1. decrease by half

✗ 2. double

✗ 3. increase four times

✗ 4. remain unchanged

Q.78 If the peak voltage of a full-wave rectifier is 20 V, what is the average output voltage?

Ans

✗ 1. $\frac{\pi}{20}$ V

✗ 2. $\frac{\pi}{40}$ V

✗ 3. $\frac{20}{\pi}$ V

✓ 4. $\frac{40}{\pi}$ V

Q.79 Maxwell's Inductance-Capacitance Bridge uses a standard capacitor to measure which of the following?

Ans

✓ 1. Inductance

✗ 2. High resistance

✗ 3. Capacitance

✗ 4. Low resistance

Q.80 A sinusoidal voltage is given by $v(t)=100 \sin(\omega t+30°)$. What is the corresponding phasor representation?

Ans

✗ 1. $100\angle -30°$

✗ 2. $100\angle 0°$

✗ 3. $100\angle 90°$

✓ 4. $100\angle 30°$

Q.81 A parallel RLC circuit has an inductance of 1 H and a capacitance of 1 μF. What is the resonant frequency (f_0)?

Ans

✗ 1. $\frac{1}{\pi \times 10^{-3}}$ Hz

✗ 2. $\frac{1}{\pi}$ Hz

✗ 3. $\frac{1}{2\pi}$ Hz

✓ 4. $\frac{1}{2\pi \times 10^{-3}}$ Hz

Q.82 Which of the following factors determines the selection of voltage levels in primary and secondary transmission?

Ans

✗ 1. Type of power generation used

✗ 2. Only the type of transformers used

✗ 3. Only the number of consumers connected

✓ 4. Distance of transmission and power demand

Q.83 Current I(s) in RL circuit is given as $I(s)=\frac{1.5}{s+4}$. Obtain i(t) for t > 0.

Ans

✗ 1. $1.5e^{4t}$

✓ 2. $1.5e^{-4t}$

✗ 3. $1.5t$

✗ 4. $1.5e^{t}$

Q.84 In distribution transformers, the explosion vent is designed to:

Ans

✗ 1. improve the cooling system

✗ 2. control oil pressure

✓ 3. release pressure in case of excessive buildup

✗ 4. monitor transformer oil quality

Q.85 In a ring distribution system, if one section of the ring experiences a fault and is disconnected, how does this affect the voltage drop at the loads connected to the remaining operational sections?

Ans

✗ 1. Voltage drop fluctuates randomly due to load redistribution.

✗ 2. Voltage drops decreases as the fault reduces overall system impedance.

✓ 3. Voltage drop remains unchanged since power is still supplied from two directions.

✗ 4. Voltage drops increases because the system now operates like a radial system in that section.

Q.86 What does the flux created by the load current in the primary winding, which links only with the primary winding, represent?

Ans

✗ 1. Induced flux

✗ 2. Magnetic flux

✓ 3. Leakage flux

✗ 4. Mutual flux

Q.87 Which of the following is a characteristic of a group drive system?

Ans

✗ 1. Minimal energy loss

✓ 2. Low capital cost

✗ 3. High flexibility in operation

✗ 4. High maintenance cost

Q.88 If two AC waveforms have a phase difference of 0°, they are said to be _____.

Ans

✗ 1. lagging

✗ 2. out of phase

✓ 3. in phase

✗ 4. leading

Q.89 Which statements about voltage drop in an alternator are correct?

I. The voltage drop due to armature resistance (IaRa) is in phase with the armature current (Ia).
II. At unity power factor, the voltage drop IaRa directly subtracts from the generated EMF (E).
III. For a leading power factor load, IaRa contributes to an increase in terminal voltage (V).
IV. Armature resistance has no effect on voltage regulation.

Ans

✗ 1. Statements III and IV only are correct.

✓ 2. Statements I and II only are correct.

✗ 3. Statements II and III only are correct.

✗ 4. Statements I and IV only are correct.

Q.90 How are the segments of the commutator insulated from each other?

Ans

✓ 1. Using thin layers of mica

✗ 2. Using air gaps

✗ 3. Using thick layers of rubber

✗ 4. Using metal sheets

Q.91 Which of the following options best describes the role of a gasifier in an agro-chemical-based power plant?

Ans

✗ 1. It directly burns biomass to produce heat.

✓ 2. It converts solid biomass into a combustible gas through partial oxidation.

✗ 3. It stores chemical fertilisers for energy production.

✗ 4. It condenses steam to generate electricity.

Q.92 If a 6-pole induction motor operates on a 60 Hz supply, its synchronous speed is _____.

Ans

✗ 1. 7200 rpm

✓ 2. 1200 rpm

✗ 3. 2400 rpm

✗ 4. 3600 rpm

Q.93 A diode rectifier circuit has an AC input voltage of 230 Vrms and a load resistance of 1 kΩ. If the diode is ideal and the circuit is a half-wave rectifier, what is the Peak Inverse Voltage (PIV) across the diode?

Ans

✗ 1. 230 V

✗ 2. 460 V

✓ 3. 325 V

✗ 4. 650 V

Q.94 Why does a single large generating unit lead to higher generating costs per unit?

Ans

✗ 1. It eliminates the need for maintenance.

✗ 2. It has zero fuel consumption.

✗ 3. It always operates at maximum efficiency.

✓ 4. It operates inefficiently during periods of low demand.

Q.95 What is the primary scope of the National Electric Code (NEC) 2011?

Ans

✗ 1. To focus exclusively on renewable energy systems

✗ 2. To define standards for power generation and transmission only

✓ 3. To provide guidelines for the design and installation of electrical systems to ensure safety and reliability

✗ 4. To regulate the manufacturing of electrical appliances and devices

Q.96 What is the reflection of light from a smooth and shiny surface like a mirror called?

Ans

✗ 1. Spread reflection

✗ 2. Irregular reflection

✓ 3. Specular reflection

✗ 4. Diffuse reflection

Q.97 Which type of transformer is used for stepping down current for measurement purposes?

Ans

✗ 1. Power transformer

✗ 2. Auto transformer

✓ 3. Current transformer

✗ 4. Voltage transformer

Q.98 For a P-N junction diode, with increase in the reverse bias potential, the width of the depletion region _____ and the transition capacitance _____.

Ans

✗ 1. increases; increases

✗ 2. decreases; decreases

✗ 3. decreases; increases

✓ 4. increases; decreases

Q.99 Which of the following types of engines is most commonly adapted to run on liquid biomass fuels?

Ans

✗ 1. Stirling engine

✗ 2. Jet engine

✗ 3. Fuel cell engine

✓ 4. Internal combustion engine

Q.100 In a three-phase system, the sum of the three phase voltage phasors in a balanced system is _____.

Ans

✗ 1. maximum at resonance

✓ 2. zero

✗ 3. equal to the line voltage

✗ 4. equal to the phase voltage